

CLAIMS

I claim:

1. A device for supporting a user's head when lying in the prone position comprising:
a padded member having a generally horse-shoe shape with a top, arcuate sides
5 spaced apart ends, a first inner side wall and a second inner side wall, said
padded member having a plurality of support regions, a first region for
supporting the user's face in the frontal sinus area; a second region adjacent to
the eye socket and cheek area for supporting the face area; and a third region
for support along the sides of the user's mandible;
10 a substantially rigid support member adapted to receive said padded member having
a pair of upstanding outwardly splayed walls, said walls defining an air
channel for the free exchange of air, said support member having a plurality
of opposing, substantially parallel zones which provide support for said
support regions when the user is lying in the prone position; and
15 means for attaching said padded member to said substantially rigid support member,
wherein said attaching means does not interfere with said padded member
conforming to the facial configuration of the user.
2. The head support device of claim 1 wherein said first region of said padded member
has a width "d" of from about 5 cm to about 20 cm, wherein the width is determined
20 at the widest point between said first inner side wall and said second inner side wall.
3. The head support device of claim 2 wherein said first region has a width "d" of
from about 5 cm to about 15 cm.
4. The head support device of claim 2 wherein said first region has a width "d" of
from about 6.25 cm to about 11 cm.

5. The head support device of claim 1 wherein said second region has a width "e" ranging from about 5 cm to about 30 cm, wherein the width is determined at the widest point between said first inner side wall and said second inner side wall.
6. The head support device of claim 5 wherein said second region has a width "e" ranging from about 5 cm to about 17 cm.
7. The head support device of claim 5 wherein said second region has a width "e" ranging from about 7.5 cm to about 17 cm.
8. The head support device of claim 1 wherein said third region has a width "f" ranging from about 1.4 cm to about 8 cm, wherein the width is determined at the widest point between said first inner side wall and said second inner side wall.
9. The head support device of claim 8 wherein said third region has a width "f" ranging from about 1.4 cm to about 8 cm.
10. The head support device of claim 8 wherein said third region has a width "f" ranging from about 2.5 cm to about 6 cm.
11. The head support device of claim 1 wherein said padded member further comprises an inner core and an outer covering encasing said inner core.
12. The head support device of claim 11 wherein said inner core is selected from the group consisting of foam rubber; rubber-latex foam; polyurethane foam; polyethylene foam; polyvinyl foam; bladders containing materials selected from the group consisting of air, liquids, air-gel, and polymeric beads; loosely compacted polymeric fibers; and combinations thereof.
13. The head support device of claim 12 wherein said inner core has a degree of fluidity and will undergo a change in at least one attribute selected from density or

volumetric displacement when a substantially vertical load of more than 100 grams is placed on said inner core.

14. The head support device of claim 12 wherein said inner core has an average thickness of from about 1 cm to about 12 cm.
- 5 15. The head support device of claim 14 wherein said inner core has an average thickness of from about 1 cm to about 8 cm.
16. The head support device of claim 14 wherein said inner core has an average thickness of from about 1.5 cm to about 5 cm.
17. The head support device of claim 14 wherein said inner core has a greater thickness
10 at the top relative to the ends of the padded member.
18. The head support device of claim 11 wherein said covering is selected from the group consisting of vinyl, rubber, leather, cotton, nylon, rayon, polyester, neoprene, and combinations of two or more of these materials.
19. The head support device of claim 1 wherein said channel has a width of from about
15 1 cm to about 10 cm.
20. The head support device of claim 1 wherein said substantially rigid support member further comprises a first end, a distal second end and an upper surface adapted to receive the padded member, wherein there is a height differential from said first end to said second end to form an angle " θ " of from about 3° to 12° , as determined from
20 a plane of said upper surface relative to a plane of the surface on which said support member rests.
21. The head support device of claim 20 wherein said angle " θ " is from about 5° to about 10° .
22. The head support device of claim 20 wherein said angle " θ " is about 7° .

23. The head support device of claim 1 wherein said plurality of zones comprises:
a top zone having a generally horizontal surface that is contoured for supporting the forehead of the user;
a middle zone having a slight concave curvature for comfortably supporting the lateral portion of the user's face adjacent to, but not on, the user's eye socket;
and
an end zone that avoids placing direct frontal pressure on the user's chin having a generally horizontal surface that is contoured for comfortably supporting the lateral portion of the user's face from just below the maxillary bone.
24. The head support device of claim 23 wherein said top zone has a length of from about 3 cm to about 9 cm and a width of from about 1 cm to about 5 cm.
25. The head support device of claim 23 wherein said top zone has a length of from about 4 cm to about 8 cm and a width of from about 1.5 cm to about 3 cm.
26. The head support device of claim 23 wherein said middle zone has a length of from about 3 cm to about 20 cm and a width of from about 1 cm to about 9 cm.
27. The head support device of claim 23 wherein said middle zone has a length of from about 6 cm to about 10 cm and a width of from about 3 cm to about 6 cm.
28. The head support device of claim 23 wherein said end zone has a length of from about 3 cm to about 9 cm and a width of from about 1 cm to about 5 cm.
29. The head support device of claim 23 wherein said end zone has a length of from about 4 cm to about 8 cm and a width of from about 2 cm to about 4 cm.
30. The head support device of claim 19 wherein said channel has a width of from about 2 cm to about 8 cm.

31. The head support device of claim 1 wherein said support member is constructed of a material selected from the group consisting of resin, heat moldable plastic, light weight metal, wood products, and combinations thereof
32. The head support device of claim 31 wherein said support member is constructed of
5 a material selected from the group consisting of resin, heat moldable plastic and combinations thereof.
33. The head support device of claim 1 wherein said support member is constructed of a resin reinforced with at least one material selected from the group consisting of glass, graphite, polyamide, polyester, polycarbonate, and mixtures thereof, and
10 wherein said reinforcing material is in the form selected from the group consisting of flakes, fibers, mats, webbing or mesh, and a combination thereof.
34. The head support device of claim 33 wherein said support member is constructed of a glass web or mesh reinforced resin.
35. The head support device of claim 1 wherein said support member further comprises
15 a lower surface and plurality of stabilizing members extending from said lower surface to the bottom of said channel.
36. The head support device of claim 35 wherein said support member further comprises a left and right perimeter and said stabilizing members extend transversely from said left perimeter to the right perimeter.
- 20 37. The head support device of claim 1 wherein said attaching means comprises hot melt adhesives; pressure sensitive adhesives; double sided tapes; contact cohesives; screws; brads; rivets; tabs, snaps, buttons, hook and loop fasteners, and weakly bonded cohesives, and combinations thereof.

38. The head support device of claim 37 wherein said attaching means is a double sided tape.

39. A device for supporting a user's head when lying in the prone position comprising:
a padded member having a generally horse-shoe shape with a top, arcuate sides

5 spaced apart ends, a first inner side wall and a second inner side wall, said padded member having a plurality of support regions, a first region for supporting the user's face in the frontal sinus area; a second region adjacent to the eye socket and cheek area for supporting the face area; and a third region for support along the sides of the user's mandible;

10 a substantially rigid support member adapted to receive said padded member having a pair of upstanding splayed outwardly walls, a first end, a distal second end and an upper surface adapted to receive said padded member and a plurality of opposing, substantially parallel zones, wherein said walls define an air channel for the free exchange of air and said zones provide support for said support regions when the user is lying in the prone position, and wherein there is a height differential from said first end to said second end of said support member to form an angle " θ " of from about 3° to 12° , as determined from a plane of said upper surface relative to a plane of the surface on which said support member rests; and

20 means for attaching said padded member to said substantially rigid support member, wherein said attaching means does not interfere with said padded member conforming to the facial configuration of the user.

40. The head support device of claim 39 wherein said first region has a width " d " of from about 5 cm to about 15 cm.

41. The head support device of claim 39 wherein said second region has a width "e" ranging from about 5 cm to about 17 cm, wherein the width is determined at the widest point between said first inner side wall and said second inner side wall.
42. The head support device of claim 39 wherein said third region has a width "f" ranging from about 1.4 cm to about 8 cm, wherein the width is determined at the widest point between said first inner side wall and said second inner side wall.
43. The head support device of claim 39 wherein said padded member further comprises an inner core selected from the group consisting of foam rubber; rubber-latex foam; polyurethane foam; polyethylene foam; polyvinyl foam; bladders containing materials selected from the group consisting of air, liquids, air-gel, and polymeric beads; loosely compacted polymeric fibers; and combinations thereof and an outer covering encasing said inner core.
44. The head support device of claim 43 wherein said inner core has a degree of fluidity and will undergo a change in at least one attribute selected from density or volumetric displacement when a substantially vertical load of more than 100 grams is placed on said inner core.
45. The head support device of claim 43 wherein said inner core has an average thickness of from about 1.5 cm to about 5 cm.
46. The head support device of claim 43 wherein said inner core has a greater thickness at the top relative to the ends of the padded member.
47. The head support device of claim 43 wherein said covering is selected from the group consisting of vinyl, rubber, leather, cotton, nylon, rayon, polyester, neoprene, and combinations of two or more of these materials.

48. The head support device of claim 39 wherein said angle "θ" is from about 5° to about 10°.
49. The head support device of claim 39 wherein said plurality of zones comprises:
a top zone having a generally horizontal surface that is contoured for supporting the
5 forehead of the user;
a middle zone having a slight concave curvature for comfortably supporting the
lateral portion of the user's face adjacent to, but not on, the user's eye socket;
and
an end zone that avoids placing direct frontal pressure on the user's chin having a
10 generally horizontal surface that is contoured for comfortably supporting the
lateral portion of the user's face from just below the maxillary bone.
50. The head support device of claim 49 wherein said top zone has a length of from about 4 cm to about 8 cm and a width of from about 1.5 cm to about 3 cm.
51. The head support device of claim 49 wherein said middle zone has a length of from
15 about 6 cm to about 10 cm and a width of from about 3 cm to about 6 cm.
52. The head support device of claim 49 wherein said end zone has a length of from about 4 cm to about 8 cm and a width of from about 2 cm to about 4 cm.
53. The head support device of claim 39 wherein said channel has a width of from about 2 cm to about 8 cm.
- 20 54. The head support device of claim 39 wherein said support member is constructed of a material selected from the group consisting of resin, heat moldable plastic and combinations thereof.
55. The head support device of claim 39 wherein said support member is constructed of a resin reinforced with at least one material selected from the group consisting of

glass, graphite, polyamide, polyester, polycarbonate, and mixtures thereof, and wherein said reinforcing material is in the form selected from the group consisting of flakes, fibers, mats, webbing or mesh, and a combination thereof.

56. A device for supporting a user's head when lying in the prone position comprising:

5 a padded member having a generally horse-shoe shape with a top, arcuate sides

spaced apart ends, a first inner side wall and a second inner side wall, said padded member having a plurality of support regions, a first region for supporting the user's face in the frontal sinus area; a second region adjacent to the eye socket and cheek area for supporting the face area; and a third region
10 for support along the sides of the user's mandible;

a substantially rigid support member adapted to receive said padded member having

a pair of upstanding splayed outwardly walls, a first end, a distal second end and an upper surface adapted to receive said padded member, a top zone having a generally horizontal surface that is contoured for supporting the
15 forehead of the user, a middle zone having a slight concave curvature for comfortably supporting the lateral portion of the user's face adjacent to, but not on, the user's eye socket, and an end zone that avoids placing direct frontal pressure on the user's chin having a generally horizontal surface that is contoured for comfortably supporting the lateral portion of the user's face
20 from just below the maxillary bone, wherein said walls define an air channel for the free exchange of air and said zones provide support for said support regions when the user is lying in the prone position, and wherein there is a height differential from said first end to said second end of said support member to form an angle " θ " of about 7° , as determined from a plane of said

upper surface relative to a plane of the surface on which said support member rests; and

means for attaching said padded member to said substantially rigid support member, wherein said attaching means does not interfere with said padded member conforming to the facial configuration of the user.

57. The head support device of claim 56 wherein said first region has a width "d" of from about 6.25 cm to about 11 cm, wherein the width is determined at the widest point between said first inner side wall and said second inner side wall.
58. The head support device of claim 56 wherein said second region has a width "e" ranging from about 7.5 cm to about 17 cm, wherein the width is determined at the widest point between said first inner side wall and said second inner side wall.
59. The head support device of claim 56 wherein said third region has a width "f" ranging from about 2.5 cm to about 6 cm, wherein the width is determined at the widest point between said first inner side wall and said second inner side wall.
60. The head support device of claim 56 wherein said padded member further comprises an inner core selected from the group consisting of foam rubber; rubber-latex foam; polyurethane foam; polyethylene foam; polyvinyl foam; bladders containing materials selected from the group consisting of air, liquids, air-gel, and polymeric beads; loosely compacted polymeric fibers; and combinations thereof, and an outer covering encasing said inner core.
61. The head support device of claim 56 wherein said support member is constructed of a resin reinforced with at least one material selected from the group consisting of glass, graphite, polyamide, polyester, polycarbonate, and mixtures thereof, and

wherein said reinforcing material is in the form selected from the group consisting of flakes, fibers, mats, webbing or mesh, and a combination thereof.

62. The head support device of claim 61 wherein said support member is constructed of a glass web or mesh reinforced resin.